CLAIMS

What is claimed is:

1. A system for the implementation of integrating physical devices into a software based framework for distributed processing, said system comprising:
at least one physical device;
an adaptation layer, comprising an adaptation layer interface and said at least one device object, said device object comprising at least one capability object and one physical device interface object; said physical device interface object corresponding to and controlling electrical interfaces to said physical device;
at least one software component interface communicating with said adaptation layer interface;
at least one software component, coupled to said software component interface; and
wherein said adaptation layer controls said physical device through said software component interface.

2. The system according to claim 1 wherein said physical device is at least one physical device chosen from the group of physical devices consisting of programmable devices, general purpose processors, specialized circuits, and field programmable gate arrays.

3. The system according to claim 1 wherein said at least one software component interface is common to said software-based frameworks for distributed computing.

4. The system according to claim 1 wherein said at least one software component interface comprises at least six service interfaces.

5. The system according to claim 1 wherein said at least one software component interface comprises:
a communication service interface; and
a control service interface;

6. The system according to claim 1 wherein said at least one software component interface comprises:
a deployment service interface;
a communication service interface;
a communication connection service interface;
an engineering service interface;
a control service interface; and
a component behavior control interface.

7. The system according to claim 1 further comprising an adaptation layer interface, said adaptation layer interface providing a single point of interface between said adaptation layer and said at least one software component interface.

8. The system according to claim 1 wherein said at least one physical device is interfaced to a general purpose processor.

9. The system according to claim 1 further comprising a processor core deployed on at least one said physical device.

10. The system according to claim 1 wherein said physical device interface object controls said physical device independently from a functionality performed by said physical device

11. The system according to claim 1 wherein said capability object controls a functionality performed by said physical device independently from said physical device.

12. The system according to claim 1 wherein said physical device is replaceable.

13. The system according to claim 11 wherein said physical device interface object is replaceable.

14. The system according to claim 1 wherein said capability object is replaceable.

15. The system according to claim 1 wherein said capability object provides activities for compliance with a software network, said activities comprising:
deployment;
control;
behavior control;
establishment of connections for communications;
communication and data transfer; and
data sampling and output.

16. The system according to claim 1 wherein said capability object comprises:
at least one base instance object;
at least one communication object, having a communication instance object; and
at least one engineering object, having an engineering instance object.

17. The system according to claim 16 wherein said base instance object, said communication instance object, and said engineering instance object are replaceable.

18. A system for the control of a software component operating on a software based framework, said system comprising:
a capability object deployed on a device object corresponding to a physical device;
said capability object comprising:
at least one base instance object;
at least one communication object; and
at least one engineering object.

19. The system according to claim 18 wherein said physical device is at least one physical device chosen from the group of physical devices consisting of programmable devices, general purpose processors, specialized circuits, and field programmable gate arrays.

20. The system according to claim 18 wherein said base instance is configured to provide deployment, control, and behavior control activities.

21. The system according to claim 18 wherein said communications object is configured to provide establishment of connections for communications and communication and transfer of data activities.

22. The system according to claim 18 wherein said engineering object is configured to sample data at a test point and transfer to an application for display and analysis.

23. The system according to claim 18 wherein said communication object comprises a communication instance object, said communication instance object is configured to provide deployment, control, and behavior control activities.

24. The system according to claim 18 wherein said engineering object comprises an engineering instance object, said engineering instance object is configured to provide deployment, control, and behavior control activities.

25. The system according to claim 18 further comprising a communication instance object, a engineering instance object; said communication instance object, said engineering instance object, and said base instance object each being independently replaceable.

26. A system for distributed processing, said system comprising:
a distributed processing framework;
a plurality of processors interfaced with said framework;
a client application software communicating with said framework;
at least one of software component deployed on said plurality of processors;
each said processor executing said software components;
each said software component controlling a programmable device via an adaptation layer;
said adaptation layer comprising an adaptation layer interface, at least one device object, at least one capability object deployed on said device object, said device object having a physical device interface object; and
said capability object and said physical device interface being independently replaceable.

27. The system according to claim 26 wherein at least one said processor is a processor chosen from the group of processors comprising programmable devices, general purpose processors, specialized circuits, and field programmable gate arrays.

28. The system according to claim 26 wherein a plurality of said software components may be deployed on each said processor.

29. A method for implementing a software component on a software based distributed computing framework, said method comprising:

deploying a program on at least one physical device by obtaining a current status of at least one said physical device and loading said program on at least one available said programmable device;

initiating processing of said program;

controlling said program by discovering parameters, setting said parameters, and resetting said parameters;

communicating data to and from said program;

terminating said processing of said program; and

resetting said physical device after the processing of said program.

30. The method according to claim 29 further comprising the step of performing at least one functionality with said program.

31. The method according to claim 29 wherein said step of initiating the processing of said program comprises:

gaining access to a capability; and

setting the state of one or more bits in a control register in a physical device.

32. The method according to claim 29 wherein said step of terminating the processing of said program comprises;

gaining access to a capability object; and

setting the state of one or more bits in a control register in a physical device.

33. The method according to claim 29 wherein said step of resetting said programmable device comprises:
initializing a physical device;
mapping memory;
setting initial attributes of associated objects;
destroying capability objects;
removing structures from memory; and
de-allocating memory and objects.

34. The method according to claim 29 wherein the step of controlling said program comprises the sub-steps of:
creating a map of physical memory addresses of physical device registers to names of parameters for each instance within each capability of each said device;
gaining access to at least one said capability;
obtaining a set of descriptions of said parameters available to said capability within said physical device;
returning a set of name and value pairs available for said capability; and
writing said parameters.

35. The method according to claim 29 further comprising:
receiving a request to establish an engineering test point monitor;
gaining access to a communications object;
setting memory addresses for the data;
attaching to selected interrupt service routines, interfaces, and drivers;
notifying said software components of the data transmission;
enabling the collection of test point data within said programmable device; and
transferring data to a processor.

36. The method according to claim 29, further comprising:
replacing a first said physical device with a second physical device; and

substituting a first physical device interface object, configured to interface with said first physical device, with a second physical device interface object, configured to interface with said second physical device.

37. The method according to claim 29, further comprising:

replacing a first said program with a second said program on said physical device; and

substituting a first capability object whereby said first program is controlled with a second capability object configured to control said second program.

38. The method according to claim 29, further comprising:

replacing a first said program with a second said program on said physical device; and

substituting a first at least one instance object whereby at least one aspect of said first program is controlled with a second at least one instance object configured to control at least one aspect said second program.

39. The method according to claim 29, further comprising:

adding at least one additional capability object to an adaptation layer having a first capability object controlling at least one said program;

deploying a plurality of said programs on said physical device.

40. The method according to claim 29 further comprising:

adding at least one additional physical device; and

adding at least one additional physical device object to an adaptation layer, said physical device object corresponding to said at least one additional physical device, said adaptation layer having at least one said physical device object whereby an existing said physical device is controlled.

41. The method according claim 29 further comprising:

replacing said program and said physical device.